

## Bazaar of Ideas

**“Applying the Green Growth approach for basic service delivery and poverty reduction”**

### Committee on Environment and Development

first session, Bangkok, 2 – 4 December 2009

**Name:** “Eco-village” and “Very Small Power Producer”:  
Pioneering a Practical Approach for Sustainable Habitats and Biosphere

**Conserving:** Energy, Water, Food, Materials

**Sector:** Housing, Agriculture, Electricity, Water

**Presented by:** TG Building Systems Company Limited  
(housing technology) and Cellennium Thailand Company Limited (energy and other resources technology)

**Championed by:** Embassy of Denmark to Thailand

**Location:** Thailand

**Year of introduction:** 2008-9



**Concept:** The concept of this project is to design and build a new and more proper approach to human habitat development in cooperation and in synergy with the natural environment. The “Eco Village” aims to create communities that generate a surplus of electricity, water, food and fertilizer by use of innovative technologies now commercially available. These capabilities would maximize the degrees of freedom for their inhabitants or communities. By designing for an increasing access to free renewable energy and information, productivity can be enhanced and wealth can be gained. Sustainability can only be reached by making the use of renewable energies an everyday reality and by adhering to the principles of complete recycling of all waste streams - solid, liquid and gas. Renewable energy technologies such as solar, biomass, and electricity storage, among others, are all tangibly applied in the Eco Village and VSPP projects to generate excess supply of electricity for the occupants to sell back to the grid. Water in the Eco Village is captured, cleaned, used, treated and recycled. Fertilizer, char and carbon dioxide, for example, which are derived from solid waste generation and from biomass-to-power processes, are captured to enhance the further growth of new biomass. All of these, taken together, create powerful regenerative forces that can sustain and enhance our biosphere.

**Other information:** Some innovative technologies being applied to the projects are: Vanadium redox-flow electrical storage and power conversion system; Energy-saving design and simulation process for house construction; Prefabricated, insulated, panelized and dry construction; Solar PV systems; Solar thermal systems; Thermal storage; Biomass energy conversion – biogas, wood-gas, charcoal to electricity; Vertical algae bioreactor for sequestering carbon and maximizing biomass production; Aerobic, microbial water purification system. The houses in the Eco Village are designed for energy efficiency and comfort. Solutions have been created to remedy normal practices that result in poorly insulated building shells and excess electricity usage for domestic cooling, lighting & appliances and hot water heating. There is maximum use of energy-saving architectural features, the right choice of materials for insulating the building shell, and the prudent integration of renewable energy and energy storage technologies.

**Associated costs and benefits:** Sustainability can be reached by making the use of renewable energies an everyday reality and by adhering to the principles of complete recycling of all waste streams - solid, liquid and gas. The agricultural sector becomes the one of the major beneficiaries of this distributed resource paradigm (i.e., electricity, water and fertilizer). With surplus of resources being generated, the wealth of the community increases.

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